IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Jerrell Hein		
Title:	RECONFIGURABLE TERMINAL		
Application No.:	10/675,529	Filed:	September 30, 2003
Examiner:	Richard B. Franklin	Group Art Unit:	2181
Atty. Docket No.:	026-0036	Confirmation No.:	6093

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APPEAL BRIEF (37 C.F.R. § 41.37)

This brief is in furtherance of the Notice of Appeal, filed on July 30, 2008. The fee required under 37 C.F.R. § 41.20(b)(2) has been previously paid in an electronic submission accompanying the Appeal Brief filed November 28, 2007.

REAL PARTY IN INTEREST

The real party in interest in this appeal is Silicon Laboratories Inc., the assignee of record, as evidenced by the assignment recorded at Reel/Frame 014568/0895.

RELATED APPEALS AND INTERFERENCES

Appellant is not aware of any prior and pending appeals, interferences or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision for this appeal.

STATUS OF CLAIMS

Claims 1-3, 5-11, 13-20, 22, and 23 are pending. Claims 1-3, 5-11, 13-20, 22 and 23 stand as rejected and are the subject of this appeal.

STATUS OF AMENDMENTS

No amendments have been filed subsequent to the final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

The independent claims involved in this appeal are claims 1, 10, 11, and 19. Independent claim 1 is directed to an apparatus including a terminal (see e.g., P2 Port 82, see Fig. 4 and accompanying description, page 7, line 21-page 8, line 18). The apparatus includes control circuitry coupled to the terminal to permanently convert the terminal from a first mode of operation in which serial communications are received over the terminal into a second mode of operation in which the terminal functions to selectively enable an output according to a voltage value on the terminal (see e.g., control circuit 30, see Fig. 4 and accompanying description, page 6, lines 4-6; page 7, line 16-page 9, line 30). The control circuit is responsive to a communication received over the terminal to convert the terminal to the second mode of operation (see e.g., page 6, lines 4-6, page 7, line 21-page 8, line 18).

Independent claim 10 is directed to an apparatus including a terminal (see e.g., P2 Port 82, see Fig. 4 and accompanying description, page 7, line 21-page 8, line 18). The apparatus includes control circuitry coupled to the terminal to permanently convert the terminal from a first mode of operation in which serial communications are received over the terminal into a second mode of operation in which the terminal functions to selectively enable an output according to a voltage value on the terminal (see e.g., control circuit 30, see Fig. 4 and accompanying description, page 6, lines 4-6; page 7, line 16-page 9, line 30). The apparatus includes a second terminal that functions as a dedicated programmable input/output terminal over which serial communications and a calibration clock are received, the second terminal not being convertible into a dedicated input control for an output enable function (see e.g., P1 Port 81, see Fig. 4 and accompanying description, page 7, line 17-page 8, line 18).

Independent claim 11 is directed to a method including utilizing a terminal in a first mode of operation in which serial communications are received over the terminal (see e.g., P2 Port 82, see Fig. 4 and accompanying description, page 7, line 21-line 28). The method includes subsequently permanently converting the terminal to a second mode of operation in response to a received command, in which the terminal functions as an input control for selectively enabling an output according to a value of terminal voltage, the second mode of operation permanently

disabling the first mode of operation (see e.g., P2 Port 82, see Fig. 4 and accompanying description, page 7, line 28-page 8, line 18).

Independent claim 19 is directed to an apparatus including a terminal (see e.g., P2 Port 82, see Fig. 4 and accompanying description, page 7, line 21-page 8, line 18). The apparatus also includes a means for permanently converting the terminal (see e.g., control circuit 30 and NVM 60, see Fig. 4, and accompanying description, page 7, line 30-page 8, line 18) from a first mode of operation in which serial communications are received over the terminal into a second mode of operation in which the terminal functions as a control input to selectively enable an output according to a voltage value on the terminal (see e.g., page 7, lines 30-32; page 8, line 29-page 9, line 30). The means for permanently converting is responsive to a serial communication received over the terminal to convert the terminal to the second mode of operation (see e.g., page 7, line 30-page 8, line 18).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Ground I: The rejection of claims 1-3, 5-9, 11, 13-20, and 22-23 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,451,912 to Torode (hereinafter, "Torode") in view of U.S. Patent No. 6,882,214 to Spenea (hereinafter, "Spenea").

Ground II: The rejection of claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Torode in view of Spenea and further in view of U.S. Patent No. 6,670,852 to Hauck (hereinafter, "Hauck").

ARGUMENT

In rejecting the claims, the Examiner engages in an examination that fails to establish a *prima facie* case of obviousness because the references fail to teach or suggest the claimed combination. See In re Nielson, 816 F.2d 1567, 1572, 2 USPQ2d (BNA) 1525, 1528 (Fed. Cir. 1987); see also In re Kahn, 441 F.3d 977, 986, 78 USPQ2d (BNA) 1329, 1335 (Fed. Cir. 2006).

In general, obviousness is a legal determination based on underlying factual inquiries. See Minnesota Min. & Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc., 976 F.2d 1559, 1572-73, 24 USPQ2d (BNA) 1321, 1332-33 (Fed. Cir. 1992). Graham v. John Deere Co., 383 U.S. 1, 17 (1966) defines the factual inquiries utilized to evaluate the prior art. Specifically, the prior art is evaluated in terms of: (1) its scope and content; (2) the differences between the prior art and the claimed invention; (3) the level of ordinary skill in the art at the time the application was filed; and (4) objective, or secondary, evidence of nonobviousness such as commercial success, failure of others, long-felt need and unexpected results, which must be considered in reaching a conclusion of obviousness. See Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ (BNA) 459, 460 (1966); Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1566-67, 1 USPQ2d (BNA) 1593, 1595-96 (Fed. Cir. 1987); Minnesota Min. & Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc., 976 F.2d 1559, 1573, 24 USPQ2d (BNA) 1321, 1333 (Fed. Cir. 1992).

In the present appeal, the issue relates to specific differences between the prior art and appealed claims. All claim limitations must be considered in the obviousness analysis. See Panduit Corp., 810 F.2d at 1576, 1 USPQ2d at 1603–04. None of the references, standing alone or in combination, teach or suggest all of the recited limitations.

Ground I: The rejection of claims 1-3, 5-9, 11, 13-20, and 22-23 under 35 U.S.C. § 103(a) as being unpatentable over Torode in view of Spenea.

Claims 1-3, 5-9, and 22

Specifically, regarding claim 1, Appellant respectfully maintains that Torode, alone or in combination with Spenea, fails to teach or suggest

> control circuitry coupled to the terminal to permanently convert the terminal from a first mode of operation in which serial communications are received over the terminal into a second mode of operation in which the terminal functions to selectively enable an output according to a voltage value on the terminal,

as required by claim 1. Torode teaches an output disable input that receives a logic level used to selectively disable an output signal and receives serial input data. Fig. 1-3; col. 3, lines 25-29; col. 4, lines 15-17. The final Office action mailed June 3, 2008 (hereinafter, the "final Office action") admits that Torode fails to teach permanently converting from a first mode of operation in which serial communications are received over the terminal into a second mode of operation in which the terminal functions to selectively enable an output according to a voltage value on the terminal, as required by claim 1. The final Office action relies on Spenea to supply this teaching. Spenea teaches PIN A and PIN C, which are a power supply pin and an input pin, respectively. See Fig. 4; col. 3, lines 43-55. During a trimming procedure of Spenea, PIN C supplies power to programmable fuse array 2 and is not otherwise used during the trimming procedure. Col. 3, lines 43-48. Upon completion of the trimming procedure of Spenea, PIN A is coupled to ground and a voltage on PIN C is increased to blow metal fuse 33, thereby locking trimming circuit 100. Fig. 4; col. 3, lines 33-67.

In contrast, claim 1 requires control circuitry coupled to the terminal to permanently convert the terminal from a first mode of operation in which serial communications are received over the terminal into a second mode of operation in which the terminal functions to selectively enable an output according to a voltage value on the terminal. Appellant respectfully points out that one obviousness inquiry requires asking "whether the improvement is more than a predictable use of prior art elements according to their established functions." See KSR Int'l Co. v. Teleflex Inc., No. 04-1350, slip op. at 13; 82 USPQ2d 1385, 1396 (U.S. 2007). Appellant maintains that the differences between the claim and the prior art are not predictable uses of prior art elements according to their established functions and the claimed combination does not satisfy other obviousness inquiries (e.g., simple substitution of one known element for another to obtain predictable results, use of a known technique to improve similar devices in the same way,

applying a known technique to a known device ready for improvement to yield predictable results, known work in one field of endeavor prompting variations of it for use in the same field or a different one based on design incentives or other market forces if the variation would have been predictable to one of ordinary skill in the art, or some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the reference or to combine the prior art teachings to arrive at the claimed invention).

The established function of PIN C of Spenea is a power supply input terminal, which may provide a voltage sufficient to blow a metal fuse. See col. 3, lines 33-67. The combination of Torode with Spenea proposed by the Office would change the established function of the OD pin of Torode from a serial input, which also operates as an output disable input, to a power supply input of Spenea. Thus, Appellant respectfully maintains that the Office's proposed combination is not a predictable use of the OD pin of Torode according to its established functions.

In the response to arguments of the final Office action the Office states that it relies on Spenea to teach "only the permanent conversion from one mode of operation to another mode of operation," without relying on the function of the input terminal of Spenea. However, PIN C of Spenea must be used to blow metal fuse 33 to lock the trimming circuit. Col. 3, line 56-col. 4, line 21; Fig. 4. Since PIN C of Spenea must be used as a power supply node to lock the trimming circuit, which the Office relies on to teach the permanent conversion of claim 1, the combination of the teachings of Torode with the teachings of Spenea to teach the limitations of claim 1 requires the functionality of PIN C of Spenea. That combination of Torode and Spenea suggested by the Office changes the function of the OD pin of Torode from its established functions of receiving an output disable signal and receiving serial input data to receiving a power supply signal of Spenea, which is not a predictable use of prior art elements according to their established functions. Thus, the teachings of Torode in combination with Spenea fail to teach or suggest the control circuitry required by claim 1.

Since Torode and Spenea, alone or in combination, fail to teach or suggest the limitations of claim 1, the PTO's rejection of claims 1-3, 5-9, and 22 should be reversed.

Claim 11, 13, 16-18, 23

Specifically, regarding claim 11, Appellant respectfully maintains that Torode, alone or in combination with Spenea, fails to teach or suggest

> utilizing a terminal in a first mode of operation in which serial communications are received over the terminal, and subsequently, permanently converting the terminal to a second mode of operation in response to a received command, in which the terminal functions as an input control for selectively enabling an output according to a value of terminal voltage, the second mode of operation permanently disabling the first mode of operation,

as required by claim 11. Torode teaches an output disable input that receives a logic level used to selectively disable an output signal and receives serial input data. Fig. 1-3; col. 3, lines 25-29; col. 4, lines 15-17. The final Office action admits that Torode fails to teach permanently converting the terminal to a second mode of operation in response to a received command, in which the terminal functions as an input control for selectively enabling an output according to a value of terminal voltage, the second mode of operation permanently disabling the first mode of operation, as required by claim 11. The final Office action relies on Spenea to supply this teaching. Spenea teaches PIN A and PIN C, which are a power supply pin and an input pin, respectively. See Fig. 4; col. 3, lines 43-55. During a trimming procedure of Spenea, PIN C supplies power to programmable fuse array 2 and is not otherwise used during the trimming procedure. Col. 3, lines 43-48. Upon completion of the trimming procedure of Spenea, PIN A is coupled to ground and a voltage on PIN C is increased to blow metal fuse 33, thereby locking trimming circuit 100. Fig. 4; col. 3, lines 33-67.

In contrast, claim 11 requires utilizing a terminal in a first mode of operation in which serial communications are received over the terminal, and subsequently permanently converting the terminal to a second mode of operation in response to a received command, in which the terminal functions as an input control for selectively enabling an output according to a value of

terminal voltage, the second mode of operation permanently disabling the first mode of operation. Appellant respectfully points out that one obviousness inquiry requires asking "whether the improvement is more than a predictable use of prior art elements according to their established functions." See KSR Int'l Co. v. Teleflex Inc., No. 04-1350, slip op. at 13; 82 USPQ2d 1385, 1396 (U.S. 2007). Appellant maintains that the differences between the claim and the prior art are not predictable uses of prior art elements according to their established functions and the claimed combination does not satisfy other obviousness inquiries (e.g., simple substitution of one known element for another to obtain predictable results, use of a known technique to improve similar devices in the same way, applying a known technique to a known device ready for improvement to yield predictable results, known work in one field of endeavor prompting variations of it for use in the same field or a different one based on design incentives or other market forces if the variation would have been predictable to one of ordinary skill in the art, or some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the reference or to combine the prior art teachings to arrive at the claimed invention).

The established function of PIN C of Spenea is a power supply input terminal, which may provide a voltage sufficient to blow a metal fuse. See col. 3, lines 33-67. The combination of Torode with Spenea proposed by the Office would change the established function of the OD pin of Torode from an output disable input, which also receives serial input data, of Torode to a power supply input of Spenea. Thus, Appellant respectfully maintains that the Office's proposed combination is not a predictable use of the OD pin of Torode according to its established functions.

In the response to arguments of the final Office action the Office states that it relies on Spenea to teach "only the permanent conversion from one mode of operation to another mode of operation," without relying on the function of the input terminal of Spenea. However, PIN C of Spenea must be used to blow metal fuse 33 to lock the trimming circuit. Col. 3, line 56-col. 4, line 21; Fig. 4. Since PIN C of Spenea must be used as a power supply node to lock the trimming circuit, which the Office relies on to teach the permanent conversion of claim 11, the combination of the teachings of Torode with the teachings of Spenea to teach the limitations of claim 11 requires the functionality of PIN C of Spenea. That combination of Torode and Spenea

suggested by the Office changes the function of the OD pin of Torode from its established functions of receiving an output disable signal and receiving serial input data to receiving a power supply signal of Spenea, which is not a predictable use of prior art elements according to their established functions. Thus, the teachings of Torode in combination with Spenea fail to teach or suggest the terminal and the permanent conversion required by claim 11.

Furthermore, the Office erroneously relies on the current provided by the power supply input of Spenea to teach a received command, as required by claim 11. Spenea teaches that

> PIN A (VCC) 5 provides the normal IC power supply, and can be tied together with PIN C (Input) 14 during the trimming process.
>
> Once the trimming process is complete, PIN A (VCC) 5 is connected to the ground GND 7, and the PIN C 14 voltage is raised a sufficient amount so the current necessary to blow out the metal fuse 33 can flow from PIN C 14 through DLOCK231, Metal fuse 33, and DLOCK132 to PIN A (VCC) 5.

Col. 3, lines 53-67. A current sufficient to blow out a metal fuse of Spenea fails to teach or suggest permanently converting the terminal to a second mode of operation in response to a received command, as required by claim 11. Thus, the teachings of Torode in combination with Spenea fail to teach or suggest the limitations required by claim 11.

Since Torode and Spenea alone or in combination fail to teach or suggest the limitations of claim 11, the PTO's rejection of claims 11, 13, 16-18, 23 should be reversed.

Claims 14 and 15

Specifically, regarding claim 14, Appellant respectfully maintains that Torode, alone or in combination with Spenea, fails to teach or suggest

> converting the terminal from the first mode to the second mode of operation in response to the command being received over the terminal,

as required by claim 14. Torode teaches that

> [t]he programming and control circuit 340 is coupled to the output disable (OD) input so as to receive serial input data. In general, the serial input data contains

> parameters to specify the output frequency, F_{out}. In order to control the F_{out} frequency, the programming and control circuit 340 is coupled to the phase lock loop 320, post divider 330 and output buffer 350.

See col. 4, lines 15-22. The receipt of serial input data containing parameters to specify output frequency of Torode fails to teach or suggest converting the terminal from the first mode to a second mode of operation in response to the command being received over the terminal, as required by claim 14.

Spenea fails to compensate for the shortcomings of Torode. Spenea teaches configuring PIN A and PIN C to provide a current sufficient to blow a fuse after a trimming process is complete. Col. 3, lines 55-61. In contrast, claim 14 requires converting the terminal from the first mode in which serial communications are received over the terminal into the second mode of operation in response to a command being received over the terminal. The current that blows the fuse of Spenea fails to teach or suggest a command serially communicated over a terminal to convert the terminal to a second mode of operation, as required by claim 14. Nowhere does Spenea teach or suggest that limitation of claim 14. Thus, the combination of Torode and Spenea fails to establish a *prima facie* case of obviousness of the limitations of claim 14. Accordingly, the PTO's rejection of claims 14 and 15 should be reversed.

Claims 19 and 20

Specifically regarding claim 19, Appellant respectfully maintains that Torode, alone or in combination with Spenea, fails to teach or suggest

> means for permanently converting the terminal from a first mode of operation in which serial communications are received over the terminal into a second mode of operation in which the terminal functions as a control input to selectively enable an output according to a voltage value on the terminal,

as required by claim 19. Torode teaches an output disable input that receives a logic level used to selectively disable an output signal and receives serial input data. Fig. 1-3; col. 3, lines 25-29; col. 4, lines 15-17. The final Office action admits that Torode fails to teach permanently

converting from a first mode of operation in which serial communications are received over the terminal into a second mode of operation in which the terminal functions as a control input to selectively enable an output according to a voltage value on the terminal, as required by claim 19. The final Office action relies on Spenea to supply this teaching. Spenea teaches PIN A and PIN C, which are a power supply pin and an input pin, respectively. See Fig. 4; col. 3, lines 43-55. During a trimming procedure of Spenea, PIN C supplies power to programmable fuse array 2 and is not otherwise used during the trimming procedure. Col. 3, lines 43-48. Upon completion of the trimming procedure of Spenea, PIN A is coupled to ground and a voltage on PIN C is increased to blow metal fuse 33, thereby locking trimming circuit 100. Fig. 4; col. 3, lines 33-67.

In contrast, claim 19 requires means for permanently converting the terminal from a first mode of operation in which serial communications are received over the terminal into a second mode of operation in which the terminal functions as a control input to selectively enable an output according to a voltage value on the terminal. Appellant respectfully points out that one obviousness inquiry requires asking "whether the improvement is more than a predictable use of prior art elements according to their established functions." See KSR Int'l Co. v. Teleflex Inc., No. 04-1350, slip op. at 13; 82 USPQ2d 1385, 1396 (U.S. 2007). Appellant maintains that the differences between the claim and the prior art are not predictable uses of prior art elements according to their established functions and the claimed combination does not satisfy other obviousness inquiries (e.g., simple substitution of one known element for another to obtain predictable results, use of a known technique to improve similar devices in the same way, applying a known technique to a known device ready for improvement to yield predictable results, known work in one field of endeavor prompting variations of it for use in the same field or a different one based on design incentives or other market forces if the variation would have been predictable to one of ordinary skill in the art, or some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the reference or to combine the prior art teachings to arrive at the claimed invention).

The established function of PIN C of Spenea is a power supply input terminal, which may provide a voltage sufficient to blow a metal fuse. See col. 3, lines 33-67. The combination of Torode with Spenea proposed by the Office would change the established function of the OD pin

of Torode from a serial input, which also operates as an output disable input, to a power supply input of Spenea. Thus, Appellant respectfully maintains that the Office's proposed combination is not a predictable use of the OD pin of Torode according to its established functions.

In the response to arguments of the final Office action the Office states that it relies on Spenea to teach "only the permanent conversion from one mode of operation to another mode of operation," without relying on the function of the input terminal of Spenea. However, PIN C of Spenea must be used to blow metal fuse 33 to lock the trimming circuit. Col. 3, line 56-col. 4, line 21; Fig. 4. Since PIN C of Spenea must be used as a power supply node to lock the trimming circuit, which the Office relies on to teach the permanent conversion of claim 19, the combination of the teachings of Torode with the teachings of Spenea to teach the limitations of claim 19 requires the functionality of PIN C of Spenea. That combination of Torode and Spenea suggested by the Office changes the function of the OD pin of Torode from its established functions of receiving an output disable signal and receiving serial input data to receiving a power supply signal of Spenea, which is not a predictable use of prior art elements according to their established functions. Thus, the teachings of Torode in combination with Spenea fail to teach or suggest the control circuitry required by claim 19.

In addition, Torode, alone or in combination with Spenea, fails to teach or suggest that

> the means for permanently converting is responsive to a serial communication received over the terminal to convert the terminal to the second mode of operation,

as required by claim 19. Torode teaches that

> [t]he programming and control circuit 340 is coupled to the output disable (OD) input so as to receive serial input data. In general, the serial input data contains parameters to specify the output frequency, F_{out}. In order to control the F_{out} frequency, the programming and control circuit 340 is coupled to the phase lock loop 320, post divider 330 and output buffer 350.

See col. 4, lines 15-22. The receipt of serial input data containing parameters to specify output frequency of Torode fails to teach or suggest a serial communication received over the terminal to convert the terminal to a second mode of operation, as required by claim 19.

Spenea fails to compensate for the shortcomings of Torode. Spenea teaches configuring PIN A and PIN C to provide a current sufficient to blow a fuse after a trimming process is complete. Col. 3, lines 55-61. In contrast, claim 19 requires that the means for permanently converting is responsive to a serial communication received over the terminal to convert the terminal to the second mode of operation. The current that blows the fuse of Spenea fails to teach or suggest a serial communication received over a terminal to convert the terminal to a second mode of operation, as required by claim 19. Nowhere does Spenea teach or suggest that limitation of claim 19. Thus, the combination of Torode and Spenea fails to establish a *prima facie* case of obviousness of the limitations of claim 19. Accordingly, the PTO's rejection of claims 19 and 20 should be reversed.

Ground II: The rejection of claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Torode in view of Spenea and further in view of Hauck.

Specifically, regarding claim 10, Appellant respectfully maintains that Torode, alone or in combination with Spenea, fails to teach or suggest

> control circuitry coupled to a terminal to permanently convert the terminal from a first mode of operation in which serial communications are received over the terminal into a second mode of operation in which the terminal functions to selectively enable an output according to a voltage value on the terminal,

as required by claim 10. Torode teaches an output disable input that receives a logic level used to selectively disable an output signal and receives serial input data. Fig. 1-3; col. 3, lines 25-29; col. 4, lines 15-17. The final Office action mailed June 3, 2008 (hereinafter, the "final Office action") admits that Torode fails to teach control circuitry coupled to a terminal to permanently convert the terminal from a first mode of operation in which serial communications are received over the terminal into a second mode of operation in which the terminal functions to selectively enable an output according to a voltage value on the terminal, as required by claim 10. The final Office action relies on Spenea to supply this teaching. Spenea teaches PIN A and PIN C, which are a power supply pin and an input pin, respectively. See Fig. 4; col. 3, lines 43-55. During a

trimming procedure of Spenea, PIN C supplies power to programmable fuse array 2 and is not otherwise used during the trimming procedure. Col. 3, lines 43-48. Upon completion of the trimming procedure of Spenea, PIN A is coupled to ground and a voltage on PIN C is increased to blow metal fuse 33, thereby locking trimming circuit 100. Fig. 4; col. 3, lines 33-67.

In contrast, claim 10 requires control circuitry coupled to a terminal to permanently convert the terminal from a first mode of operation in which serial communications are received over the terminal into a second mode of operation in which the terminal functions to selectively enable an output according to a voltage value on the terminal. Appellant respectfully points out that one obviousness inquiry requires asking "whether the improvement is more than a predictable use of prior art elements according to their established functions." See KSR Int'l Co. v. Teleflex Inc., No. 04-1350, slip op. at 13; 82 USPQ2d 1385, 1396 (U.S. 2007). Appellant maintains that the differences between the claim and the prior art are not predictable uses of prior art elements according to their established functions and the claimed combination does not satisfy other obviousness inquiries (e.g., simple substitution of one known element for another to obtain predictable results, use of a known technique to improve similar devices in the same way, applying a known technique to a known device ready for improvement to yield predictable results, known work in one field of endeavor prompting variations of it for use in the same field or a different one based on design incentives or other market forces if the variation would have been predictable to one of ordinary skill in the art, or some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the reference or to combine the prior art teachings to arrive at the claimed invention).

The established function of PIN C of Spenea is a power supply input terminal, which may provide a voltage sufficient to blow a metal fuse. See col. 3, lines 33-67. The combination of Torode with Spenea proposed by the Office would change the established function of the OD pin of Torode from a serial input, which also operates as an output disable input, to a power supply input of Spenea. Thus, Appellant respectfully maintains that the Office's proposed combination is not a predictable use of the OD pin of Torode according to its established functions.

In the response to arguments of the final Office action the Office states that it relies on Spenea to teach "only the permanent conversion from one mode of operation to another mode of

operation," without relying on the function of the input terminal of Spenea. However, PIN C of Spenea must be used to blow metal fuse 33 to lock the trimming circuit. Col. 3, line 56-col. 4, line 21; Fig. 4. Since PIN C of Spenea must be used as a power supply node to lock the trimming circuit, which the Office relies on to teach the permanent conversion of claim 10, the combination of the teachings of Torode with the teachings of Spenea to teach the limitations of claim 10 requires the functionality of PIN C of Spenea. That combination of Torode and Spenea suggested by the Office changes the function of the OD pin of Torode from its established functions of receiving an output disable signal and receiving serial input data to receiving a power supply signal of Spenea, which is not a predictable use of prior art elements according to their established functions. Thus, the teachings of Torode in combination with Spenea fail to teach or suggest the control circuitry required by claim 10.

In addition, Torode, alone or in combination with Spenea and Hauck, fails to teach or suggest that

> a second terminal that functions as a dedicated programmable input/output terminal over which serial communications and a calibration clock are received, the second terminal not being convertible into a dedicated input control for an output enable function,

as required by claim 10. The final Office action admits that Torode in combination with Spenea fails to teach that limitation of claim 10 and the Office relies on Hauck to supply that teaching. Hauck teaches that an input signal, IN, may be received on a pin 120. See col. 2, lines 6-20; Fig. 2. Hauck teaches further that "[t]he signal IN may be a periodic signal having a reference frequency." See col. 2, lines 10-12. Claim 10 requires the terminal to function as a dedicated I/O terminal over which serial communications and a calibration clock are received. Nowhere does Hauck teach or suggest that pin 120 receives serial communications as required by claim 10.

Furthermore, Appellant respectfully points out that

> [o]ften, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the

> ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate this review, this analysis should be made explicit.

KSR Int'l Co. v. Teleflex Inc., No. 04-1350, slip op. at 13; 82 USPQ2d 1385, 1396 (U.S. 2007). Moreover, "'[a] reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference or would be led in a direction divergent from the path that was taken by the applicant.'" In re Kahn, 441 F.3d 977, 990, 78 U.S.P.Q.2d (BNA) 1329, 1338 (Fed. Cir. 2006) (citations omitted).

The Office action fails to provide a proper rationale for combining a dedicated programming connection with a programmable crystal oscillator that is designed to not require dedicated programming connections and thus impermissibly introduces hindsight into the obviousness analysis. In particular, the Office action states that allowing in-system tuning of a crystal oscillator is the motivation to combine Torode and Spenea with Hauck. However, Torode teaches that an object of the invention is "to provide a programmable crystal oscillator that does not require any dedicated programming connections." Col. 1, lines 64-66. In addition, Torode touts the advantage that the programmable crystal clock oscillator includes an industry standard package that does not contain any dedicated programming connections. Col. 2, lines 5-7. Torode states that "the programmable crystal oscillator 100 is housed within a package having a plurality of connections and no dedicated programming connections." See col. 2, line 66-col. 3, line 1 (emphasis added). Torode teaches further that

> the package comprises an industry standard four pin canned package for crystal oscillators. The industry standard package for the programmable crystal oscillator 100 provides dimensions, pinout and electrical characteristics that are identical to a conventional can oscillator. Because the programmable crystal oscillator 100 is enclosed within the industry standard package, no additional connections or pins are required for programming. The programmable crystal oscillator 100 packaging includes a grounded metal cover to provide a hermetically sealed package and to reduce electromagnetic interference (EMI). For the industry standard canned package, the output disable input is received on pin 1, the ground connection is received on pin 7, the V_{dd} power is received on pin 14, and F_{OUT} is generated on pin 8.

Col. 3, lines 9-24 (emphasis added). Thus, Torode teaches away from combination with Hauck to include a second terminal that functions as a dedicated programmable input/output terminal, as

required by claim 10, and the combination of Torode, Spenea, and Hauck fails to establish a *prima facie* case of obviousness of the limitations of claim 10. Accordingly, the PTO's rejection of claim 10 should be reversed.

CONCLUSION

For the at least the foregoing reasons, Appellant's presently claimed invention would not have been obvious to one of ordinary skill in the art under 35 U.S.C. § 103(a) in view of the cited prior art. Accordingly, this honorable Board is respectfully requested to reverse the rejections of claims 1-3, 5-11, 13-20, 22, and 23 and to direct the claims of the present application to be issued.

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Nicole Teitler Cave — 9/29/08
Nicole Teitler Cave — Date

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Respectfully submitted,

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CLAIMS APPENDIX

1. An apparatus comprising:

a terminal; and

control circuitry coupled to the terminal to permanently convert the terminal from a first mode of operation in which serial communications are received over the terminal into a second mode of operation in which the terminal functions to selectively enable an output according to a voltage value on the terminal;

wherein the control circuit is responsive to a communication received over the terminal to convert the terminal to the second mode of operation.

2. The apparatus as recited in claim 1 wherein once the terminal is converted to the second mode of operation the first mode of operation for the terminal is permanently disabled.

3. The apparatus as recited in claim 1, wherein a terminal configuration determining the mode of operation of the terminal is stored in a non-volatile memory.

5. The apparatus as recited in claim 1 wherein the serial communication received over the terminal in the first mode of operation includes a command and write data.

6. The apparatus as recited in claim 1, wherein the control logic distinguishes between a calibration clock received on the terminal and serial communications when in the first dedicated mode of operation.

7. The apparatus as recited in claim 1 wherein the output enable function is for controlling the output of one or more clocks.

8. The apparatus as recited in claim 6 further comprising:

a controllable oscillator coupled to receive a reference frequency and to supply a clock signal that is coupled to an output terminal that is controlled by the terminal

functioning to selectively enable the output according to the voltage value on the terminal; and

a resonating device coupled to supply the reference frequency.

9. The apparatus as recited in claim 8 wherein the terminal is on a package, the package including an integrated circuit and a resonating device, the integrated circuit including the controllable oscillator, and the resonating device being one of a crystal and surface acoustic wave (SAW) device.

10. An apparatus comprising:

a terminal;

control circuitry coupled to the terminal to permanently convert the terminal from a first mode of operation in which serial communications are received over the terminal into a second mode of operation in which the terminal functions to selectively enable an output according to a voltage value on the terminal; and

a second terminal that functions as a dedicated programmable input/output terminal over which serial communications and a calibration clock are received, the second terminal not being convertible into a dedicated input control for an output enable function.

11. A method comprising:

utilizing a terminal in a first mode of operation in which serial communications are received over the terminal; and

subsequently permanently converting the terminal to a second mode of operation in response to a received command, in which the terminal functions as an input control for selectively enabling an output according to a value of terminal voltage, the second mode of operation permanently disabling the first mode of operation.

13. The method as recited in claim 11, further comprising storing a terminal configuration selecting one of the first and second modes of operation in a non-volatile memory.

14. The method as recited in claim 11 further comprising converting the terminal from the first mode to the second mode of operation in response to the command being received over the terminal.

15. The method as recited in claim 14 wherein the communication includes a command and write data.

16. The method as recited in claim 11, further comprising:
receiving a calibration clock on the terminal in the first mode of operation; and
distinguishing between the calibration clock and serial communications in control logic coupled to the terminal.

17. The method as recited in claim 11 further comprising controlling one or more clock outputs according to the voltage value of the terminal in the second mode of operation.

18. The method as recited in claim 11 wherein the terminal is on a package, the package including an integrated circuit and a resonating device, the resonating device being one of a crystal and surface acoustic wave (SAW) device.

19. An apparatus comprising:
a terminal; and
means for permanently converting the terminal from a first mode of operation in which serial communications are received over the terminal into a second mode of operation in which the terminal functions as a control input to selectively enable an output according to a voltage value on the terminal;
wherein the means for permanently converting is responsive to a serial communication received over the terminal to convert the terminal to the second mode of operation.

20. The apparatus as recited in claim 19, further comprising a non-volatile memory for storing a terminal configuration determining the mode of operation of the terminal.

22. The apparatus as recited in claim 2 wherein the terminal is not operable in the second mode until the terminal is permanently converted to operate in the second mode.

23. The apparatus as recited in claim 11 wherein the terminal is not operable in the second mode until the terminal is permanently converted to operate in the second mode.

EVIDENCE APPENDIX

There is no evidence submitted pursuant to 37 C.F.R. § 1.130, 1.131, or 1.132 or any other evidence entered by the Examiner and relied upon by Appellant in the appeal.

RELATED APPEALS APPENDIX

There are no decisions rendered by a court or the Board in any proceeding identified above in the Related Appeals and Interferences section.